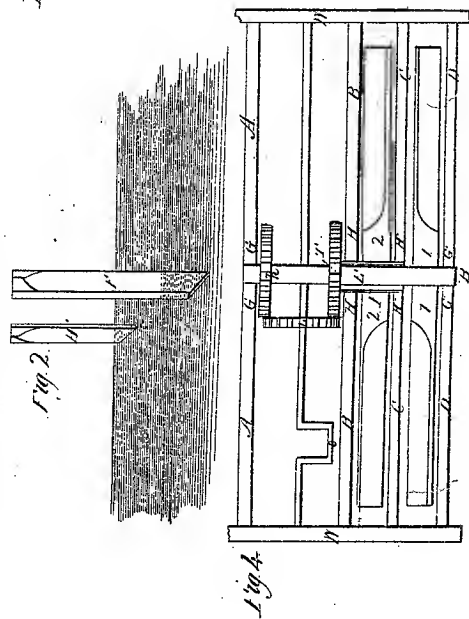
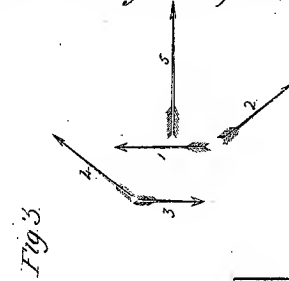
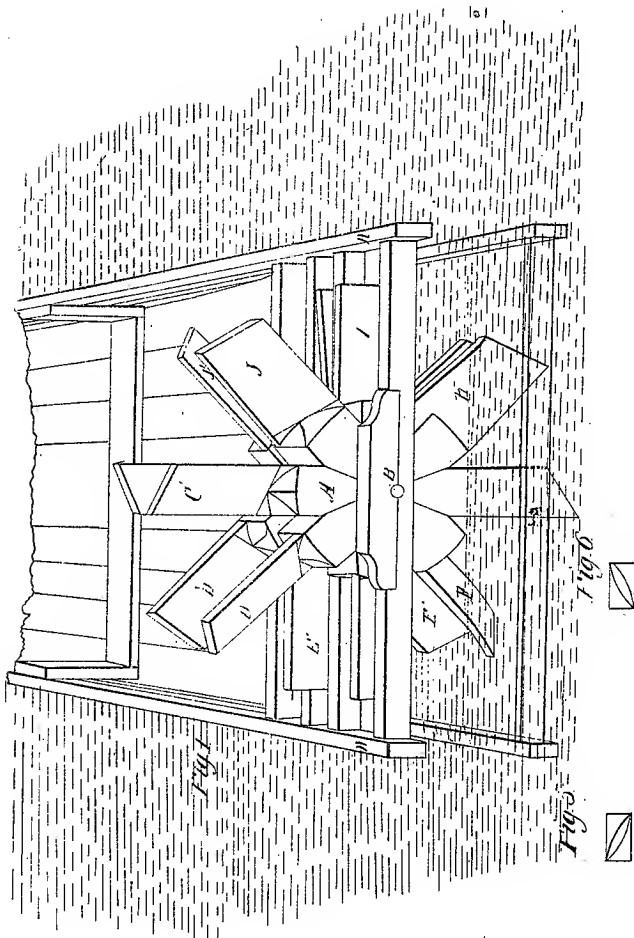


*J. Ong.
Paddle Wheel.*

Nº 199.

Patented May 22, 1837.



*Witnesses
Benjamin Reed
J. Sampson Field*

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UNITED STATES PATENT OFFICE.

JESSE ONG, OF NORTH HUNTINGDON, PENNSYLVANIA.

IMPROVEMENT IN PADDLE-WHEELS FOR PROPELLING BOATS, VESSELS, &c.

Specification forming part of Letters Patent No. 199, dated May 23, 1837.

To all whom it may concern:

Be it known that I, JESSE ONG, of North Huntingdon township, in the county of Westmoreland and State of Pennsylvania, have invented a new and Improved Mode of Propelling Boats; and I do hereby declare that the following is a full and exact description.

The nature of my invention consists in so constructing two paddle-wheels and applying them to the stern of a boat that their paddles shall act in a manner resembling the blade of an oar in the hands of a skillful sculler when employed to propel the boat from the stern, but, moreover, so that the paddles of the one wheel shall at the same time and in such a manner oppose the action of the other as to render their united influence direct and uniform, and by dividing and dispersing the currents they create to increase their own efficacy and to nullify any danger of injury to the banks of rivers and canals.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

The paddles at their base, or where they are set into the flange, are of any convenient shape—as, for example, a parallelogram, Figure 5, which divided will form two exact squares. The diagonal of that parallelogram will be the direction, width, and base of the blade of the paddle. Its length and size will be determined by the burden of the boat and the nature of the waters and the number of the paddles by their length and size, in such a manner on the one hand as to make the application of the motive power as continuous as possible, but on the other as that the paddles following in the wake of each other do not by their immediate succession materially disturb or depreciate the resistance of the water to their stroke. The one wheel being constructed as above, whichever of the diagonals of the parallelogrammic base of the paddles be used as the base of the blades—as, for example, the diagonal indicated in Fig. 5—the second wheel will be constructed in every respect similarly, excepting only that the base of its paddle-blades will be the other diagonal, as indicated in Fig. 6. The wheels thus constructed and marked, the former No. 2, the latter No. 1, in the drawings, will be suspended, No. 1 upon a shaft E, Fig. 4, which is supported by the plumber-block D at the point G', and the plumber-block A at the

point G, and No. 2 upon the sleeve F, which is supported by the plumber-blocks B and C at the points H and H', and is of such a size as that the shaft E can turn freely and without touching in it. The plumber-blocks are fastened to a frame which projects from the stern of the boat, as the projecting gunwale W in the drawings, Fig. 1. The shaft E is turned by the cog R, and the sleeve F by the similar cog T. Both cogs are moved in contrary directions by the similar cog L, which is turned by the crank O, to which the power is attached. The wheels therefore, when the machine is worked, ply in contrary directions and with equable motion, No. 1 to the left and No. 2 to the right hand.

Fig. 1 is a perspective view of the square stern of a boat with the wheels attached, the wheel No. 1 being indicated by the first letters in the alphabet and No. 2 by the same letters accented. When the paddle F, Figs. 1 and 2, strikes the water, the paddle H' will also strike at the same moment and with equal force in a contrary direction. These directions are indicated in the ground plan, Fig. 3, by the arrows Nos. 1 and 3. Because of the angle at which the blades of the paddles enter the water the resistance of that fluid will be in the direction of the diagonals of the parallelogrammic base of the paddles other than the diagonals employed as the base of the paddle-blades, as indicated by the arrows Nos. 2 and 4, and the resolution of this composition of force will be parallel with a line drawn from the point B, Figs. 1 and 4, of the shaft E to the center of the bows of the boat, as indicated by the long arrow 5, Fig. 3. The force of the created currents will be the reverse of the impelling impulse of the paddles—i. e., diametrically opposite to the direction of the arrows in the plan; but because of the relative positions of their origins the one current (of the paddle H') will at first be partially opposed by the other until the paddles approach their greatest descent, when the latter will be much weakened by filling up the vacuities created with the former. From a further consideration of these actions it will appear that every current is constantly opposing or opposed or filling up vacuities; and the new currents formed are immediately influenced by others, and that every one is continually and momentarily changing the position and direction of its origin, so that

while they materially contribute to the effect of every stroke they are themselves speedily scattered and destroyed.

What I claim as my invention, and desire to secure by Letters Patent, is—

The application of two paddle-wheels for the purpose of propelling boats at the center of the stern and having that center as the common focus of their motions, which are contrary in direction, and their plane at right angles instead of parallel with the direct pro-

gress of the boat, and the direction and order of their stroke is such that the created currents, while they assist the efficacy of the wheel, are themselves dissipated and destroyed by their successive action on each other.

JESSE ONG.

Witnesses:

BENJAMIN REID,
J. HAMPDEN FIELD.